VOL. 31 No. 11

BULLETIN

OF THE

TORREY BOTANICAL CLUB

NOVEMBER, 1904

Desmids from Newfoundland

JOSEPH A. CUSHMAN

(WITH PLATE 26)

The material here reported upon was collected at Rose au Rue, Newfoundland, September 10 and 11, 1903, by Dr. Glover M. Allen. It consisted of but two bottles of material, one containing sphagnum from a pond on an alpine hilltop, the other containing portions of leaves of water-plants with a little of the sediment washed from them. From the lateness of the season and the small amount of material the twenty species represented a fair number for such circumstances. Certain species were especially abundant, *Tetmemorus*, *Cylindrocystis*, *Mesotaenium* and *Cosmarium* being the genera most frequently met with. These are, I believe, the first desmids that have ever been reported from any part of the island. The following were found :

DESMIDIUM BAILEYI (Ralfs) De By.

Diameter of filament, 25 μ.

But one filament of this species was found, but that was of the typical American form figured by Nordstedt (K. Sv. Vet.-Akad. Handl. **22**[8] : *pl. 2. f. 4.* 1888). Wolle seems, as Nordstedt says, to have been wrong when he says that this species has a twisted filament and that "the lateral margins are straight, not bicrenate." In all the specimens I have seen, the crenae of the margin have always been apparent and I have not yet seen a twisted filament. The figure referred to above seems to be typical of the American form of this species.

[The preceding number of the BULLETIN, Vol. 31, No. 10, for October, 1904 (31 : 523-580, *pl. 24, 25*) was issued 1 N 1904.]

MESOTAENIUM ENDLICHERIANUM Naeg.

Long. 35 μ; lat. 12 μ.

Very common in the second bottle of material mentioned above.

CYLINDROCYSTIS AMERICANA W. & G. S. West. (PLATE 26, FIG. 1.)

Long. 40 μ; lat. 18 μ.

Although this is slightly smaller than the typical form, it has the same proportions and the same characteristic shape. Frequent in the first collection.

CYLINDROCYSTIS sp. ?

Long. 37.4 μ; lat. 24.8 μ; lat. apic. 15 μ.

Very finely but sparsely punctate, slightly constricted in the middle. But one specimen of this character noted.

PENIUM DIGITUS (Ehrenb.) Bréb.

Long. 160–180 μ; lat. 63–71 μ.

Varying somewhat in size and form, fairly common.

PENIUM CLOSTERIOIDES Ralfs.

Long. 98 μ; lat. 29 μ.

Few of this species noticed.

TETMEMORUS BREBISSONII TURGIDUS Ralfs. (PLATE 26, FIG. 2.)

Long. 174–198 μ; lat. 40–44 μ.

Very common among the moss in the first collection.

TETMEMORUS LAEVIS (Kütz.) Ralfs. (PLATE 26, FIG. 3.)

Long. 133 μ; lat. 25 μ.

Not as common as the other two species of this genus.

TETMEMORUS MINUTUS De By. (PLATE 26, FIG. 4.)

Long. 62–65 μ; lat. 15–16 μ.

The commonest species in the collection.

EUASTRUM AMPULLACEUM Ralfs. (PLATE 26, FIG. 5.)

Long. 87 μ; lat. 47 μ; lat. lob. pol. 22 μ.

Somewhat smaller than the form usually found; frequent.

Euastrum Allenii sp. nov. (PLATE 26, FIG. 6.)

Long. 105 μ; lat. 49μ; lat. lob. pol. 33 μ; lat. isthm. 18 μ.

E. submagnum, circiter duplo longius quam latum, modice constrictum, sinu lineare: semicellulae septemlobae, lobis lateralibus

retusis, lobis polaribus truncatis : supra isthmum tumore instructae : membrana sparse scrobiculato-punctata.

This species is very distinct. The peculiar rectangular form and its multilobate character will at once distinguish it. It is named for Dr. Glover M. Allen, who collected it.

EUASTRUM BINALE Ralfs.

Long. 18 μ; lat. 15 μ.

Not at all frequent : in second collection.

EUASTRUM ELEGANS (Bréb.) Kütz., var.

Long. 25 μ; lat. 15 μ; lat. isthm. 4 μ.

In the second collection, rare.

XANTHIDIUM ARMATUM Bréb. (PLATE 26, FIG. 7.)

Long. s. spin. 148 μ; lat. s. spin. 93 μ; lat. c. spin. 115 μ; lat. isthm. 45 μ.

Central series of four granules : several specimens found in the first collection. Considerable variation was seen in the two semicells of the same specimen. The form figured was the most common.

Micrasterias conferta Novae-terrae var. nov. (PLATE 26, FIG. 8.)

Long. 102 μ; lat 93 μ; lat. isthm. 12 μ; lat. lob. pol. c. sp. 37 μ.

This in some of its characters is like the var. *hamata* of Wolle, but the polar lobe is less widely separated from the lateral ones, the polar lobe not so wide at the apex and distinctly spinose. The edges of the lateral lobes adjacent to the polar lobe have a median angle, but not greatly developed. The constrictions are more open and the ultimate portions not so elongated as in the var. *hamata*.

COSMARIUM IMPRESSULUM MINOR Turner. (PLATE 26, FIG. 9.)

Long. 16 μ; lat. 12 μ; isthm. 3.5 μ.

This form is common in the two collections. It seems to be exactly like the forma *minor* of Turner in shape and measurements.

COSMARIUM PSEUDOPYRAMIDATUM Lund.

Long. 50–56 μ; lat. 31–33 μ; lat. isthm. 9–10 μ.

Very common in the collections, varying slightly in size.

STAURASTRUM DUBIUM West.

Long. 28 μ. lat. 22 μ; lat. isthm. 10 μ.

Very common.

STAURASTRUM NANUM Wolle. (PLATE 26, FIG. 10.)

Long. 25 μ; lat. c. acul. 31 μ; lat. s. acul. 22 μ; lat. isthm. 8 μ.

Common in the first collection.

STAURASTRUM CRENULATUM (Naeg.) Delp.

Lat. c. proc. 37 μ.

A single empty cell found.

BOSTON SOCIETY OF NATURAL HISTORY.

Explanation of plate 26

FIG. 1. *Cylindrocystis americana* W. & G. S. West. × 600.
FIG. 2. *Tetmemorus Brebissonii turgidus* Ralfs. × 600.
FIG. 3. *T. laevis* (Kütz.) Ralfs. × 600.
FIG. 4. *T. minutus* De By. × 600.
FIG. 5. *Euastrum ampullaceum* Ralfs. × 600.
FIG. 6. *E. Allenii* sp. nov. × 600.
FIG. 7. *Xanthidium armatum* Bréb. × 600.
FIG. 8. *Micrasterias conferta Novae-terrae* var. nov. × 600.
FIG. 9. *Cosmarium impressulum minor* Turner. × 1200.
FIG. 10. *Staurastrum nanum* Wolle. × 1200.

An anomalous structure on the leaf of a bean seedling

W. T. Horne

A number of red Valentine beans were placed in the soil of some pots in the physiological laboratory of the New York Botanical Garden on September 12, 1903, and the preparations were covered with bell-jars. The seedlings which soon arose were somewhat drawn, being grown under a high temperature and in a relatively highly humid atmosphere.

When the bell-jars were removed a structure which was apparently a root was noticed on one of the plants just below the cotyledons. On the same plant an apparently similar organ but somewhat smaller was noticed on the back of one of the leaves, appressed to the midvein. The bell-jar was replaced to prevent injury to the unusual structures by drying. Figure 1 shows the plant one week from planting the seed, the root-like structures at *a* and *b*. Both were without chlorophyl and had the appearance of strong root-tips, the upper being more slender toward the tip.

Figure 1. Bean seedling, showing anomalous structures at *a* and *b*. Half nat. size.

After being kept for another week neither had apparently made farther growth and the lower was turning brown at the tip. It was removed, fixed in Flemming's fluid and imbedded in paraffine. Longitudinal sections showed that it had a root-cap and the arrangement of tissues characteristic of a true root. It had bent strongly away from the light and downward.

The other structure was left for a week longer, when, as it showed no sign of changing further and the plant under the bell-jar was becoming unhealthy, the whole leaf was cut off and examined. The midvein was cut in pieces, fixed in Flemming's fluid and imbedded in paraffine. The free part of the root-like organ was about 5 mm.

long, and it could be traced back along the midrib as a white ridge to about 1 cm. from the base of the leaf. It was bent slightly away from the light and by the position of the leaf was directed downward. No root-cap could be seen. Trans-sections were made at vari-

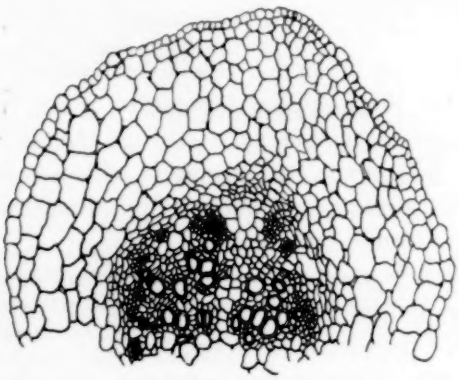

FIGURE 2. Transverse section of midrib, about 9 mm. from base, of the leaf bearing the anomolous appendage.

ous points and stained with saffranin- Delafield's haematoxylin. At about 7 mm. from the base of the leaf the structure of the midrib is normal, only a very slight ridge showing at its lower side. At 2 mm. farther the ridge is distinct with the narrow celled par-

FIGURE 3. Longitudinal section of terminal portion of structure shown at *b* in *figure 1*. ×45.

enchyma about the bundle somewhat increased below the ridge but the fibrovascular elements not disturbed (FIGURE 2). At 8 mm. farther the ridge has increased in size and a group of slightly narrower cells occupies nearly half of the space from the bundle to the epidermis. At 5 mm. farther the ridge is larger and the group of more slender cells is narrower and extends out towards its axis; the parenchyma is shrunken at one side. At 9 mm. farther the organ has reached its full size and commenced to separate from the midvein. An axial strand of slender cells is distinctly differentiated here and entirely separated from the vascular bundle of the mid-

rib. At 4 mm. farther the organ is very nearly free from the midrib and shows the same internal structure as where it has become separated.

The outer end was sectioned longitudinally. The epidermis is contiuous to the tip and set with short hairs The body

FIGURE 4. Part of a section such as that shown in *figure 3*, enlarged. × 200.

of the structure is parenchyma, the inner cells being larger and longer. There is a distinct axial strand composed of much narrower cells varying considerably in length and some having oblique and some square ends. The central strand is much broader in the first two millimeters from the end and has developed in it numerous lignified vessels with simply reticulated or spirally thickened walls. At about 2 millimeters from the end

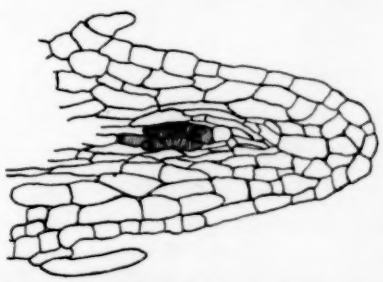

FIGURE 5. Tip of a section such as that shown in *figure 3*, enlarged. × 200.

the lignified elements disappear and the central strand becomes much narrower. FIGURE 3 shows somewhat diagrammatically the relation of the different parts. FIGURE 4 shows a section at about the center of the group of vessels, and FIGURE 5 shows the structure of the tip.

The first structure was a true root formed in a somewhat unusual position. The second is probably best regarded as an anomalous appendicular structure. The stimulus of high temperature and humidity probably favored the growth of these unusual structures.

The nomenclature of Calonyction bona-nox

HOMER D. HOUSE

The species described in Dr. Small's recent *Flora of the southeastern United States*, as *Calonyction bona-nox*,* is known under the common name of moonflower. A study of available herbarium material shows that two very distinct species are represented, and in an effort to determine their proper status a formidable array of synonymy is encountered. The condition of affairs was pointed out by Kuntze † in 1891, and briefly the facts are as follows: In the first edition of *Species Plantarum*, Linnaeus describes *Convolvulus aculeatus* ‡ and *Ipomoea alba*.§ Later, Linnaeus combines them under the name of *Ipomoea bona-nox*,‖ and includes there nearly all of the citations given under the two previously named species. *Ipomoea alba* is again taken out under the name of *Convolvulus grandiflorus*,¶ and given the same pre-Linnaean citation as *Ipomoea alba* with an additional citation. These changes may be shown by the following tabulation.

Pre-Linnaean citations.	*Convolvulus aculeatus* L. 1753.	*Ipomoea alba* L. 1753.	*Ipomoea bona-nox* L. 1762.	*Convolvulus grandiflorus* L. f. 1781.
Hort. Cliff. 496.	×		×	
Pluk. Alm. *t. 276. f. 3.*	×		×	
Sloan. Jam. 55; Hist. 1: *t. 96. f. 1.*	×		×	
Raj. Suppl. 371.	×			
Bauh. Pin. 296.	×	×	×	×
Rheed. Mal. 11: *t. 50.*			×	
Herm. Mus.				×

The genus *Calonyction* Choisy ** is based upon the characters of large salverform corolla, exserted stamens and thickened

* Small, J. K. Flora of the Southeastern United States, 961. 1903.

† Kuntze, O. Rev. Gen. 442. 1891.

‡ Sp. Pl. 155. 1753.

§ Sp. Pl. 161. 1753.

‖ Sp. Pl. Ed. 2, 228. 1762.

¶ Linn. f. Supplement, 136. 1781.

** Choisy. Mem. Soc. Phys. Genev. 6: 440. 1833. –Conv. Or. 59. 1834.—In DC Prodr. 9: 345. 1845.

pedicels. The type is *Calonyction speciosum* Choisy,* which includes at least the Linnaean species *Convolvulus aculeatus* and *C. muricatus*. The revised nomenclatorial status, therefore, of the two species under consideration may be presented as follows:

Calonyction aculeatum (L.) comb. nov.

Convolvulus aculeatus L. Sp. Pl. 155. 1753.

Ipomoea bona-nox L. Sp. Pl. Ed. 2, 228. 1762. In part.—Jacq. Hort. Schoenb. **1**: 16. 1797.

Convolvulus latiflorus Desr. Encyc. **3**: 537. 1790.

Calonyction speciosum Choisy, Mem. Soc. Phys. Genev. **6**: 441. 1833.—In DC. Prodr. **9**: 345. 1845. In part, excl. vars. β and γ, at least.

Calonyction bona-nox Boj. Hort. Maurit. 228. 1837.—Small, Fl. S. E. U. S. 961. 1903.

Ipomoea aculeata Kuntze, Rev. Gen. 442. 1891.—Blume, Bijdr. 715. 1825 (according to Choisy but not according to Kuntze).—G. Don, Gen. Syst. **4**: 270. 1838.

Convolvulus foliis cordatis, caule aculeato L. Hort. Cliff. 496.

Convolvulus americanus, subrotundis foliis, viticulis spinosis Pluk. Alm. 115.

Convolvulus maximus, caule spinulis, etc. Sloane, Jam. 55; Hist. 1: 151.

Smilax aspera Indiae occidentalis Bauh. Pin. 296.

Characterized by a smooth or muricate, high-twining stem with milk-like sap: leaf-blades glabrous, ovate or suborbicular, 5–15 cm. long, entire or variously 3–5-lobed, acuminate, cordate, of a thin, somewhat membranaceous texture: peduncles axillary, one- to several-flowered; pedicels becoming much thickened in fruit: sepals appressed to the corolla, about 1.5 cm. long, all, or at least the outer, with infraterminal tail-like appendages: corolla white, nocturnal, strictly salverform, tube 8–12 cm. long, limb 6–10 cm. broad: capsules ovoid, 2 cm. high; seeds dark brown or nearly black, shining, but very minutely pubescent, sometimes strongly so.

TYPE LOCALITY: Tropical America.

DISTRIBUTION: Florida; western Mexico to Central and South America; West Indies and the tropical regions of the Old World.

* Choisy, *l. c.*

ILLUSTRATIONS: Pluk. Alm. *pl. 276. f. 3;* Sloane, Hist. **1**: *pl. 96. f. 1;* Jacq. Hort. Schoenb. **1**: *pl. 36;* Cav. Ic. **3**: *pl. 300;* Gaertn. Sem. **2**: *pl. 134. f. 3;* Vell. Fl. Flum. **2**: *pl. 54;* Bot. Repos. **6**: *pl. 403;* Bot. Mag. *pl. 752;* Bot. Reg. *pl. 889*, and *pl. 917*.

Among the many sheets examined the following may be cited:

FLORIDA. Newport, Key Largo, *Pollard, Collins & Morris 170*, 1898. Everglades, west of Miami, *Small & Nash*, 1901. Snapper Creek, south of Cocoanut Grove, *Small & Nash*, 1901. Miami, *Small & Carter 675*, 1903; *A. P. Garber*, June, 1877; *Britton 419*, 1904. Myers, Lee Co., *A. S. Hitchcock 225* and *226*, 1900. Steamboat Key, *Tracy 6789*, 1900. Eustis, Lake Co., *Nash 1333*, 1894. Jupiter Inlet, *A. H. Curtiss 5543*, 1895.

MEXICO. Lower California, *C. A. Purpus 530*, 1901. Maleje, Lower Calif., *Palmer 33*, 1887. Tres Marias Isl., *Nelson 4269*, 1897. Mazatlan, *W. G. Wright 1212*, 1888. Chapala, Jalisco, *Palmer 727*, 1886. Orizaba, *F. Muller 3017*, 1855. Oaxaca, *Holway 3735*, 1899; *Chas. L. Smith 904*, 1894. Yucatan, *Gaumer 330*.

WEST INDIES. Matanzas, Cuba, *Britton & Shafer 264* and *517*, 1903. Pinar del Rio, Cuba, *Palmer & Riley 657*, 1900; *Shafer 529*, 1903. Cienequinta, Santa Clara, Cuba, *Combs 716*, 1896. Santiago, Cuba, *Hamilton 6* and *9*, 1902. Porto Rico, *Mr. & Mrs. A. A. Heller 375*, 1899.

The form with 3–5-lobed and subhastate leaf-blades is described as var. *heterophylla* by Kuntze,* but cannot be regarded as a subspecies.

Calonyction album (L.) comb. nov.

Ipomoea alba L. Sp. Pl. 161. 1753.

Ipomoea bona-nox L. Sp. Pl. Ed. 2, 228. 1762. In part.

Convolvulvus grandiflorus L. f. Suppl. 136. 1781.

Ipomoea longiflora R. Br. Prodr. **1**: 484. 1810.

Calonyction grandiflorum Choisy, Mem. Soc. Phys. Genev. **6**: 442. 1833.—Conv. Or. 60. 1834.—In DC. Prodr. **9**: 346. 1845.

Calonyction speciosum var. γ *pubescens* Choisy, in DC. Prodr. **9**: 345. 1845.

* Kuntze. Rev. Gen. 442. 1891.

Munda Valli Rheede, Mal. **11**: 103.

Similar to *C. aculeatum*. The stem not muricate, but covered with a thin, whitish, often rough or pubescent bark: peduncles and pedicels very stout: leaf-blades ovate, deeply cordate, entire, acuminate, of a thick and somewhat coriaceous texture, prominently reticulate-veined and slightly pubescent beneath: sepals ovate, thick and coriaceous, rounded or blunt at the apex, apparently never appendaged: corolla larger than in the preceding species, 12–18 cm. long, the limb 8–15 cm. broad.

TYPE LOCALITY: Malabar.

DISTRIBUTION: Florida Keys; Bahamas and St. Vincent. Also St. Domingo and St. Thomas (*fide* Choisy). Common in the tropics of India and the East Indies. Perhaps introduced into America.

ILLUSTRATIONS: Rheede, Mal. **11**: *pl. 50;* Jacq. Hort. Vind. **3**: *pl. 69.*

The following specimens have been examined from North America and compared with old world specimens:

FLORIDA. Elliotts Key, *Small & Nash*, Nov. 6 and 7, 1901; *N. L. Britton 378*, 1904.

BAHAMAS. South Cat Cay, *Millspaugh 2416*, 1904. Rum Cay, *Coker 445*, 1903. Salt Cay, New Providence, *John I. & Alice R. Northrop 244*, 1890.

ST. VINCENT. *H. H. & G. W. Smith*, March, 1890.

A perplexing array of synonymy can be attached to each of the above species, but no attempt will be made to assign these numerous names at the present time, lest mistakes in so doing might be misleading as regards the identity of the two species above described.

NATIONAL MUSEUM, WASHINGTON, D. C.

The Polyporaceae of North America — IX. Inonotus, Sesia and monotypic genera

William A. Murrill

Continuing the work begun in article VIII of this series upon colored sessile forms, an attempt is here made to treat in their proper relations plants with brown context and spores, constituting the genus *Inonotus*, and plants with brown context, hyaline spores and daedaleoid or lamelloid tubes, constituting the genus *Sesia*. A few genera are also added that contain only a single species each.

Inonotus Karst. Medd. Soc. Faun. et Fl. Fenn. **5**: 39. 1879

Inoderma Karst. Medd. Soc. Faun. et Fl. Fenn. **5**: 39. 1879.

Inodermus Quél. Ench. 173. 1886.

This genus was based upon four species, *I. cuticularis* (Bull.), *I. hispidus* (Bull.), *I. unicolor* (Schw.) and *I. hypococcinus* (Berk.). The two last can hardly be considered congeners of the first. The type species is *I. cuticularis*, not found in America. Karsten in later publications included also *I. fibrillosus*, *I. vulpinus*, *I. triqueter*, *I. radiatus* and *I. nidulans* in the genus, although some of them have hyaline spores. These he divided into two groups, one in which the pileus is spongy-fleshy and anoderm and the other containing species with a dry, thin, fibrous cuticle. To the first group, such species as *I. cuticularis* and *I. hispidus* belonged, while *I. radiatus* and *I. fibrillosus* were in the second group.

This second group at first constituted the genus *Inoderma* of Karsten, but the name is untenable, because preoccupied by *Inoderma* of S. F. Gray for a genus of lichens. Quélet's genus *Inodermus* was not only preoccupied so far as the name was concerned, but was founded upon *I. hispidus* (Bull.), one of the original typical species of *Inonotus* Karst. The species here included in the genus *Inonotus* are brown, sessile, usually anoderm, with fibrous context and brown-tinted spores. There is considerable variation in spore coloration, the spores of some species being

very deeply colored, while others are so pale as to appear almost hyaline, especially when not fully matured.

The largest species is *I. hirsutus*, sometimes over 30 cm. in diameter, while the smallest, *I. pusillus*, is rarely over two or three millimeters across. As regards the distribution of our species, two, *I. hirsutus* and *I. radiatus*, occur in Europe and in temperate North America; three others, *I. perplexus*, *I. dryophilus* and *I. amplectens*, appear to be confined to temperate regions of North America; while the remaining six are known only from certain localities in tropical America.

Synopsis of the North American species

1. Spores deep brown in color. 2.
   Spores faintly tinted with brown. 5.
2. Surface of pileus hirsute, tubes luteous, margin obtuse; plants of large size and two centimeters or more in thickness. 1. *I. hirsutus.*
   Surface of pileus conspicuously tomentose, margin acute; plants of medium size and one centimeter or less in thickness. 2. *I. perplexus.*
   Surface of pileus glabrous or finely tomentose. 3.
3. Pileus 8 cm. or more in width, rigid, ferruginous throughout, margin rather obtuse. 3. *I. dryophilus.*
   Pileus 5 cm. or less in width. 4.
4. Surface of pileus very rimose, tubes 2 cm. long. 4. *I. texanus.*
   Surface of pileus rugulose and zonate, but not rimose, tubes 1 cm. long. 5. *I. jamaicensis.*
5. Pores scarcely visible to the unaided eye. 6.
   Pores conspicuous. 7.
6. Pileus thick, azonate, margin obtuse, hymenium dull. 6. *I. corrosus.*
   Pileus thin, zonate, margin very sharp, hymenium glistening. 7. *I. Wilsonii.*
7. Plants minute, only a few millimeters across, erumpent from lenticels of dead twigs. 8. *I. pusillus.*
   Plants of medium size. 8.
8. Surface soft, anoderm, sporophores growing on living shrubs, often encircling the smaller branches. 9.
   Surface hard, becoming encrusted, sporophores found on decaying wood. 9. *I. radiatus.*
9. Hymenium very concave, umbrinous, margin sharp and depressed. 10 *I. amplectens.*
   Hymenium plane or nearly so, becoming almost black, margin rather blunt and not depressed. 11. *I. fruticum.*

1. **Inonotus hirsutus** (Scop.)

Boletus hirsutus Scop. Fl. Carn. ed. 2. **2**: 468. 1772.
Boletus spongiosus Lightf. Fl. Scot. 1033. 1777.
Boletus hispidus Bull. Herb. Fr. *pl. 210.* 1784. *pl. 493.* 1791.

Boletus flavus Poll. Fl. Ver. **3**: 607. 1824.
Polyporus hispidus Fr. Syst. Myc. **1**: 362. 1821.
Polyporus endocrocinus Berk. Lond. Jour. Bot. **6**: 320. 1847.
Inonotus hispidus Karst. Medd. Soc. Faun. et Fl. Fenn. **5**: 39. 1879.
Inodermus hispidus Quél. Ench. 172. 1886.

As one would naturally suppose, such a large and attractive plant as this did not long remain unnoticed by the early mycologists. Micheli refers to it as the "hairy and obscure agaric with golden hymenium." Batarra figures it and calls it *Agaricus favaginosus uvidus*. Scopoli describes it as a *Boletus* with reddish hispid surface and white or reddish hymenium occurring on the trunks and branches of trees; and he assigns to it the specific name *hirsutus*. Bulliard not only described it well under his name *Boletus hispidus*, the name by which it is best known, but he also made two excellent plate figures of it showing its stages and varieties. Under one name or another it has received attention from nearly all writers who have treated this group.

To the stranger in Europe there are few more attractive species among the fungi. It grows in considerable abundance on the sycamore, ash, oak, beech, walnut, etc., often infesting a large part of the trunk and emerging in brilliantly colored sporophores from wounds made in pruning or other openings into the heartwood. These sporophores sometimes measure a foot and a half in diameter and are clothed above with a dense coat of long reddish hairs which become black with age. The hymenium is at first white but soon becomes yellow, yielding a yellow dye when treated with water.

In Sweden, this species is rare and occurs only on ash. It is also rare in the northern United States, but is somewhat more common farther south; although it is by no means so abundant here as in Europe. Its principal host in America is the oak. A year or two ago I collected seven large sporophores on a decayed spot in a living oak trunk at Fort Lee, New Jersey. This was in September and the fruit-bodies were already much decayed. Plants collected by Lea on hickory in Ohio in the latter part of August, 1844, were so advanced as to seem new to Berkeley, who named them *Polyporus endocrocinus*, remarking that the species was

allied to *P. Schweinitzii*, but was distinguished by its saffron-colored substance and strigose-squamose pileus. The two specimens collected are still at Kew and are practically identical in form and appearance with my own collections made in September. The species has also been found by Commons in Delaware, Ellis in New Jersey, Memminger in North Carolina and Dr. Martin in Florida. European exsiccati are too numerous to mention here.

2. **Inonotus perplexus** (Peck)

Polyporus perplexus Peck, Rept. N. Y. State Mus. Nat. Hist. **49**: 19. 1896.

This species was described from plants collected by Peck on beech trunks in Oneida County, New York. It is hairy-tomentose to setose-hispid, resembling *I. cuticularis* and *I. hispidus*. Its spores are ferruginous and broadly elliptical, being smaller than those of *I. hispidus*. The same plant was distributed by Shear in his New York Fungi, *no. 110*, under the name of *Polyporus radiatus*. His specimens were found at Alcove, New York, on a dead beech trunk. Plants were recently determined for me by Prof. Peck, although he thinks the types were destroyed while the herbarium was housed in the state capitol.

The present species is well named *P. perplexus*, since it has troubled more than one mycologist and collector during the last quarter of a century, some calling it *P. cuticularis* because of its hairy surface and others passing it for *P. radiatus* on account of its general appearance and evident close relationship with that species. During the past summer I had the opportunity of studying a large number of the fresh and growing sporophores on the trunk of a living sycamore maple in Bedford City, Virginia; and found the velvety, bright ferruginous surface and the sharp, sterile margin very characteristic. It seems to range much farther south than *I. radiatus* and is also more commonly collected, although neither can be said to be abundant.

Specimens are at hand from Pennsylvania, *Stevenson;* Delaware, *Commons;* Maine, *Hodson;* Georgia, *Underwood;* Virginia, *Murrill 1005;* Alabama, *Earle;* Louisiana, *Langlois;* Mississippi, *Tracy*. The hosts given are oak, spruce (?), and maple. It occurs on trunks and logs of either dead or decaying trees.

3. **Inonotus dryophilus** (Berk.)

Polyporus dryophilus Berk. Lond. Jour. Bot. **6**: 321. 1847.

The types of this species were sent from Ohio by Lea, who collected them on living trunks of red oak. The fruit-body is large and rigid, anoderm, ferruginous throughout, whitened externally by a fine canescence, with thin, angular, brown pores. The species resembles *Polyporus dryadeus*, but is smaller and more rigid and has larger and differently colored pores. In some respects it is allied to *Hapalopilus gilvus*, but the spores are deep ferruginous instead of hyaline and the pileus is much thicker, with a more obtuse margin. Excellent specimens are to be seen in the Ellis collection, which were found by Morgan in Ohio in 1885. He reports this species as occurring at the base of living oak trees and on oak logs.

4. **Inonotus texanus** sp. nov.

Pileus ungulate, attached by the vertex, 3 × 5 × 4 cm.; surface fulvous to fuliginous, concentrically and radially rimose, especially in age, the separated areas imbricated; margin very obtuse, concolorous: context corky, concentrically banded, fulvous to umbrinous, very thin, only one-tenth the length of the tubes in thickness; tubes 3 cm. long, 2–3 to a mm., tawny chestnut, polygonal, edges thin, entire; spores ovoid, smooth, very dark brown, 1–2-guttulate, 8 × 10 μ.

The above description is based upon a single rather old sporophore collected by Underwood on a mesquite (?) tree near Austin, Texas, November 24, 1891. Although young stages are not represented, still the characters as shown are very distinct.

5. **Inonotus jamaicensis** sp. nov.

Pileus dimidiate to triquetrous, convex, sessile, attached by a broad base, simple or imbricate, 2 × 3 × 1–1.5 cm.; surface encrusted, minutely rugose, cinereous behind, marked toward the margin with dark-brown or black zones; margin regular, often obtuse: context fibrous, fulvous, only a few millimeters thick; tubes 1 cm. long, 4 to a mm., larger by confluence, fulvous, polygonal to irregular, edges thin, entire; spores ovoid, smooth, deep ferruginous, 1–2-guttulate, very copious, 5 × 7 μ.

The type plants of this species were collected by Underwood on the Mabess river, Jamaica, at an altitude of 3,000 ft., April 23, 1903. None of the young stages was found. Judging from the

fruit-bodies, the host must have been the small dead or dying branches of some broad-leaved tree.

6. **Inonotus corrosus** sp. nov.

Pileus conchate, clasping, simple or imbricate, 3 × 5 × 1–4 cm.; surface ferruginous to fulvous, furrowed and much corroded in age; margin entire, obtuse, tomentose, honey-yellow: context thick, spongy, fibrous, ferruginous, perforated by insects soon after maturity; tubes very short, only 1 mm. long each season, 8 to a mm., fulvous, subcylindrical, edges entire, obtuse to acute; spores lenticular, smooth, pale ferruginous, 4 μ in diameter, 1 μ thick, hyphae deep ferruginous.

The type plants of this species were collected by Earle, *no. 203*, near Hope Gardens, Jamaica, October 27, 1902. They grew upon a dead vine clinging to a tree. Two or three years growth were represented in the much weathered and wormeaten central parts of the sporophores, while the latest growths stood out in marked contrast. The flattened appearance of the spores may be due to desiccation, but this character is fairly constant. A single sporophore of this species was also collected in the island of New Providence by Britton, *no. 246*, Aug. 24, 1904, growing on a small dead twig.

What appear to be specimens of this same plant are placed at Kew under *Polyporus chrysites* Berk., a species described from the region of the Rio Negro river in Brazil as thin and leathery, while the various plants bearing that name at Kew are mostly thick and soft or even hard and perennial. Specimens collected in Cuba by Wright should probably belong to *I. corrosus* instead of to *P. chrysites*.

7. **Inonotus Wilsonii** sp. nov.

Pileus dimidiate, applanate, sessile, 2–3 × 4–6 × 0.5 cm.; surface anoderm, velvety-tomentose, fulvous, marked with a few shallow concentric furrows; margin thin, entire, concolorous, sulcate, deflexed in drying: context soft, punky, homogeneous, ferruginous-fulvous, 1–3 mm. thick, separated from the tubes by a very thin black layer; hymenium ferruginous, glistening, tubes 1–2 mm. long, 6–9 to a mm., isabelline within, mouths polygonal, regular, edges thin, entire; spores lenticular, smooth, pale ferruginous, 3–4 μ in diameter, 1–1.5 μ thick.

This species was collected by Percy Wilson, *no. 438*, on decay-

ing logs in Honduras, Feb. 16, 1903. It resembles some plants called *P. chrysites* at Kew, but is quite distinct from that species. The shape of the spores as given above may be due to extreme desiccation.

8. **Inonotus pusillus** sp. nov.

Pileus sessile, convex, flabelliform, tapering to a narrow base, erumpent from lenticels, 2 × 2 × 0.5–1 mm.; surface ferruginous to fulvous, silky-striate, subzonate, shining, margin pallid, acute, often depressed: context thin, fibrous, ferruginous; tubes umbrinous, comparatively large, 2–4 to a mm., polygonal, becoming irregular, much exceeding in length the thickness of the context; mouths at first whitish-pulverulent, dissepiments thin, entire: spores small, ovoid, 3.5 × 5 μ, pale ferruginous, copious, hyphae concolorous.

This species is based upon plants collected by Dr. Edward Palmer, *no. 1520*, at Manzanillo, Mexico, in 1892. The tiny brown sporophores were found in large numbers emerging from the lenticels of small dead branches of *Jacquinia*. It was apparently recognized as a new species by Ellis and Galloway and distributed by them jointly under the genus-name *Trametes*, and later listed by Patouillard (Tax. Hymen. 101. 1900) as a species of *Xanthochrous*. The tentative name first proposed for the species is here made use of, but according to present usage I am, unfortunately, not permitted to cite the authors, since no description accompanied the name.

This is one of the very smallest plants met with in the *Polyporaceae*. Two other tiny plants are of interest in this connection, *Porodiscus pendulus*, which is also erumpent from lenticels, but has hyaline spores; and *Coltriciella dependens*, which is more like the present species in general appearance and structure, but is stipitate instead of sessile, having the stipe attached to the vertex of the pileus like the handle of a tiny bell.

9. INONOTUS RADIATUS (Sowerby) Karst.

Boletus radiatus Sowerby, Eng. Fung. *pl. 196*. 1799.
Polyporus radiatus Fr. Syst. Myc. **1**: 369. 1821.
Polyporus glomeratus Peck, Rept. N. Y. State Mus. Nat. Hist. **24**: 78. 1873.
Inoderma radiatum Karst. Medd. Soc. Faun. et Fl. Fenn. **5**: 39. 1879.

Inonotus radiatus Karst. Rev. Myc. **3**: 19. 1881.

This species was first described from specimens collected on a decaying stump in Sussex, England. In the description, Sowerby refers to its habit of emerging from the substratum in a small woolly mass and then growing in a radiating manner with this mass as a center. He describes the pileus as zoned, with yellow margin, and the texture as woody. Berkeley mentions hazel stems as its favorite host in England. In Sweden it is abundant on hazel and birch, while in Germany and Austria it is found mostly on alder, which last is its most common host in America.

The form found on a prostrate sugar maple trunk and described as *P. glomeratus* by Peck, in 1873, hardly differs sufficiently from the typical form to constitute a distinct species. With the two forms before me, I can find no specific distinguishing character either with the unaided eye or with the microscope. This similarity was long since noticed and published by Cooke. The relations of *Polyporus scrobiculatus*, and various forms included in *Inonotus radiatus* by Karsten, to the typical form of this species do not come within the scope of the present paper.

Specimens are at hand from England, *Plowright;* Berlin, *Magnus, Hennings;* Tyrol, *Bresadola;* Sweden, *Murrill;* Canada, *Macoun;* Connecticut, *Underwood;* New York, *Peck, Earle.*

10. **Inonotus amplectens** sp. nov.

Pileus hemispherical, clasping, concave beneath, 1–3 cm. in diameter, 1–2 cm. thick; surface soft, velvety, dark yellowish orange, margin at first obtuse, entire, straw-colored, becoming thin, undulate or toothed, deflexed and concolorous: context soft, spongy-fibrous, ferruginous; hymenium at first honey-yellow, becoming umbrinous, tubes 2–4 mm. long, 2–4 to a mm., larger by confluence, umbrinous within, mouths at first closed by a yellowish membrane, subcircular, regular, entire, becoming large, irregular, coarsely toothed and concentrically split into irpiciform plates; spores ellipsoidal, smooth, hyaline, 1–2-guttulate, 4 × 6 μ.

Type specimens of this plant were collected by R. M. Harper, *1990a*, on the Ocmulgee river near Lumber City, Georgia, Sept. 11, 1903. The fruit-bodies were found encircling living twigs of *Asimina parviflora* (?). The upper surface of the plant resembles *Inonotus fruticum* (B. & C.), but the hymenium is very distinct.

11. **Inonotus fruticum** (B. & C.)

Polyporus fruticum B. & C. Jour. Linn. Soc. Bot. **10**: 310. 1868.

This species was named from its habit of growing upon shrubs. In shape it varies from thin and dimidiate to nearly spherical, according to its position on the branch and the size of the branch. If on a small twig it frequently encircles it. The pileus is very soft and spongy and the pores become almost black. Orange and oleander are mentioned as hosts. Several well-preserved specimens are among Wright's Cuban collections at Kew.

SPECIES INQUIRENDAE

Polyporus aureonitens Pat. & Peck, Rept. N. Y. State Mus. Nat. Hist. **42**: 25. 1889.

This species is based on material collected in New York by Peck and described by Patouillard. It occurs on birch, alder and maple. There are several specimens of it in the herbarium here collected in Massachusetts, Connecticut and New York. In his original publication, Peck says it is related to *P. radiatus*, but is distinguished by its paler color, often lineate-zoned pileus and paler spores. In a recent letter to me, Dr. Peck distinguishes *P. glomeratus* from *P. aureonitens* as follows: "*P. glomeratus* differs from *P. aureonitens* in its darker colors, more uneven surface of the pileus, entire absence of concentric lines or narrow zones on the surface of the pileus, which is more irregular and wavy on the margin, and never shining. Its spores in mass are of a brighter, richer, yellow color. The two are readily distinguished at sight by any one who has seen them growing."

By referring to Sowerby's description of the young stages of *P. radiatus*, it will be seen that the zonate pileus and yellow margin are present in that species. Also excellent European specimens from Bresadola and others, called by them *young P. radiatus*, seem to differ in no particular from New York specimens of *P. aureonitens*. It can hardly be imagined that two such eminent mycologists as Peck and Patouillard could have confused American and European species in this way, but they may not have had at hand good material of the young stages for comparison. In view of the above facts, I have thought it best to defer the settle-

ment of the question at least until I can study our American form in the field.

SESIA Adans. Fam. **2**: 10. 1763

Serda Adans. Fam. **2**: 11. 1763.
Gloeophyllum Karst. Hattsv. **2**: 79. 1882.
Lenzitina Karst. Finlands Basidsv. 337. 1889.

The genus *Sesia* was founded upon Vaillant's figures of *S. hirsuta* (Schaeff.) drawn from specimens collected on the timbers of a boat at St. Cloud, Paris. The genus *Serda* is based upon a resupinate form of the same species collected at the same time and place and figured in the same work. In establishing the genus *Gloeophyllum*, Karsten overlooked Adanson's genera already founded and later even overlooks or purposely changes his own generic name to *Lenzitina*. All four names above mentioned are strictly synonymous, being founded on the same type species. Karsten listed three other European species, *L. abietina* (Bull.), *L. cinnamomea* (Fr.) and *L. septentrionalis* Karst., as congeners of the type.

The species of this genus have white spores, brown substance and normally daedaleoid or lamelloid tubes. Abnormal poroid forms quite frequently occur. All the species are found on decaying wood, and, as is often the case, some grow only on the wood of conifers, while others are confined to deciduous wood. *S. hirsuta* is abundant in the northern hemisphere on coniferous wood of all kinds, *S. Berkeleyi* is rare on coniferous wood in tropical America; *S. pallidofulva* is abundant in North America on wood of deciduous trees, while its place is taken in tropical America by *S. striata*. The species are all of medium size, easily distinguished by striking characters.

Synopsis of the North American species

1. Context ferruginous to chestnut. 2.
   Context avellaneous to umber. 3.
2. Surface hirsute. 1. *S. hirsuta*.
   Surface finely tomentose or glabrous. 2. *S. Berkeleyi*.
3. Furrows broad, a millimeter or more in width, pileus very thin, multizonate. 3. *S. striata*.
   Furrows narrow, only a half of a millimeter in width, pileus rather thick, usually devoid of zones. 4. *S. pallidofulva*.

1. SESIA HIRSUTA (Schaeff.) Murrill

Agaricus hirsutus Schaeff. Fung. Hist. *pl. 76.* 1762.
Agaricus saepiarius Wulf. in Jacq. Collect. **1**: 347. 1786.
Agaricus boletiformis Sowerby, Eng. Fung. *pl. 418.* 1814.
Daedalea saepiaria Fr. Obs. Myc. **1**: 105. 1815.
Lenzites saepiaria Fr. Epicr. 407. 1838.
Lenzites rhabarbarina B. & C. Ann. Mag. Nat. Hist. II. **12**: 428. 1858.—Grevillea, **1**: 35. 1872.
Sesia hirsuta Murrill, Jour. Myc. **9**: 88. 1903.

This species is very abundant in the north temperate zone on logs, stumps and various other decaying wood of pine, fir, spruce, hemlock, juniper and other coniferous trees. It varies considerably in its wide range. In the higher regions of Colorado and adjoining states, for example, it is large and coarse and almost shaggy; while in the southeastern states, on the other hand, it is thinner and less densely hirsute than the typical European form, with more delicate, easily lacerated gills and a somewhat differently colored surface. The latter form was described from South Carolina by Berkeley and Curtis as *Lenzites rhabarbarina*, but I cannot distinguish it specifically from many of the typical specimens of *S. hirsuta.* It has been quite frequently collected in the South by Earle, Langlois, Britton, Schrenk and others. Another form, called *var. porosa* by Peck, is very distinct and would constitute a good species if it could be proven to be constant. In one instance Peck found a number of specimens on a single pine trunk that were all alike poroid. Further observation might establish a definite form found sometimes alone and sometimes growing with the species under consideration.

From the large list of specimens examined in connection with this study the following are listed to show the range of the species: Canada, *Macoun, Dearness;* New York, *Peck, Jelliffe, Underwood;* Maine, *Miss White;* New Jersey, *Ellis;* Connecticut, *Miss White;* Ohio, *Morgan;* Colorado, *Underwood & Selby;* Montana, *Rydberg & E. Bessey, Anderson;* Tennessee, *Murrill 689;* Virginia, *Murrill 121, 152;* Alabama, *Earle, Schrenk;* Florida, *Britton;* Louisiana, *Langlois;* Sweden, *Murrill;* Switzerland, *Murrill;* Tyrol, *Bresadola, Murrill.*

2. **Sesia Berkeleyi** (Sacc.)

Daedalea rhabarbarina Berk. & Cooke, Grevillea, **6**: 130. 1877; not *D. rhabarbarina* Mont.

Daedalea Berkeleyi Sacc. Syll. Fung. **6**: 381. 1888.

This species was described from specimens collected on pine stumps near Gainesville, Florida. The fruit-body is larger than in any other American species and the surface is only slightly tomentose, becoming glabrous with age. The margin is much lighter than the surface, being tawny-orange in color and contrasting vividly with the dark umber of the older growth. It is also more porous than most species of *Sesia*, the tubes rarely becoming more than sinuous, though it is sometimes lamellate in parts of the tropics where the fruit-body grows quickly. The only specimens at hand are those collected by C. G. Lloyd in Florida and by Smith in Nicaragua and Mexico.

3. **Sesia striata** (Sw.)

Agaricus striatus Sw. Prodr. 148. 1788.—Fl. Ind. Occ. **3**: 1920. 1806.

Daedalea striata Fr. Syst. Myc. **1**: 334. 1821.

Lenzites striata Fr. Epicr. 406. 1838.

Lenzites protracta Fr. Nov. Symb. 45. 1851.

This species was the first of two plants listed by Swartz in his *Prodromus* under the genus *Agaricus*, the second being *Schizophyllum alneum*, also common in Jamaica. The brief description, "*A. acaulis, convexus ferrugineus pubescens, margine integro, lamellis alternis interruptis cinereis*," is, as usual, much amplified in his later work.

Specimens from Mexico, still to be seen in the Fries herbarium at Upsala, were described by Fries as *L. protracta*, a name which has been generally assigned in Europe to a very different plant. Fries also called some of the Mexican collections of this species *L. umbrina*.

Sesia striata is quite abundant on decaying wood in various parts of tropical America, as the following partial list of specimens will show: Colombia, *Baker;* Nicaragua, *Smith;* Honduras, *Wilson 200, 276;* Mexico, *Smith;* Cuba, *Underwood & Earle 503, 740, 750, 1526, 1562, Shafer;* Jamaica, *Underwood 740, Earle 82,*

96, 118, 145, 161, 180; Porto Rico, *Earle 53;* New Providence, *Mrs. Britton;* Florida, *C. G. Lloyd.*

4. **Sesia pallidofulva** (Berk.)

Daedalea pallidofulva Berk. Hook. Lond. Jour. **6**: 322. 1847.
Lenzites vialis Peck, Rept. N. Y. State Mus. Nat. Hist. **26**: 67. 1874.

This species was described from material collected by Lea in Ohio in 1842. The type plants were taken from a dead log in a log fence in March. According to Berkeley, it stands exactly intermediate between *Daedalea* and *Lenzites.* Specimens sent to Fries by Berkeley are still to be seen in the herbarium at Upsala and they correspond in all points with the plant known as *Lenzites vialis* Peck, described from specimens found on railroad ties in New York by Peck in 1874.

The present species is a very common one in the United States, occurring abundantly on railroad ties and other dead timber of oak, willow, ash and other deciduous trees and more rarely on coniferous wood; though the broad general distinction between this species and *S. hirsuta* in regard to host usually holds good, the former being common on coniferous wood and the latter on deciduous wood. In appearance, there is considerable difference in the two species, *S. pallidofulva* being less brightly colored, and less distinctly zoned, with the furrows closer, shorter and more porous. The margin also is white when fresh and turns dark when bruised. There is a close resemblance between this species and *L. trabea* (Pers.) Fr., which occurs on deciduous wood in Europe.

The following specimens are at hand: Canada, *Dearness;* New Jersey, *Ellis;* New York, *Barnhart, Murrill, Peck;* Ohio, *Morgan, C. G. Lloyd;* Indiana, *Underwood;* Louisiana, *Langlois;* Kentucky, *Miss Price;* Tennessee, *Murrill 494, 495, 542, 579;* Iowa, *Macbride, Holway;* Pennsylvania, *Rau, Banker.*

SPECIES INQUIRENDAE

Lenzites mexicana Mont. Ann. Sci. Nat. II. Bot. **20**: 360. 1843. Collected on dead wood in the province of Oaxaca, Mexico, by Andrieux. Apparently a stipitate and otherwise abnormal form

of *S. striata*, but Montagne is decidedly opposed to this opinion and specimens are not at hand to settle the question. Compare his remarks on this point:

"Si l'on ne considère que l'hyménium de ce *Lenzites*, il est évident qu'on le distinguera mal du *L. striata;* mais si l'on observe la disposition du duvet dressé et comme conglutiné qui forme les zones concentriques, la profondeur des sillons qui séparent ces zones, et l'aspect rugueux et peluché qui en résulte, caractères que je ne rencontre dans aucun des nombreux individus du *L. striata*, on se convaincra promptement que, quoique voisines, ces deux espèces ne sauraient être confondues."

Daedalea Burserae Pat. Jour. de Bot. **3**: 341. 1889. Described from plants found on rotten wood of *Bursera gummifera* in Martinique by Duss. It is said by the author to be easily distinguished from all its congeners by the yellow powder which covers its pores in the young stages. I have not seen the type plants.

Daedalea jamaicensis P. Henn. Hedw. **37**: 281. 1898. Collected on dead wood at Port Antonio, Jamaica, and thus described:

"Pileo suberoso-spongioso, dimidiato, sessile, interdum imbricato, zonato sulcatoque rugoso, rufo-brunneo vel atro-violaceo nigricante, zonis obscurioribus, margine pallidiori, acuto; intus cinnamomeo; hymenio poroso-labyrinthiformi vel sinuoso-lamelloso, subochraceo vel subcinerescente."

This species is very near to *Sesia Berkeleyi*. Further study of the type plants, however, is necessary in order to decide whether or not the two species are synonymous.

ISCHNODERMA KARST. Medd. Soc. Faun. et Fl. Fenn. **5**: 38. 1879

This genus was founded upon *Isch. resinosum* (Schrad.) and four other European species, the one here mentioned being the nomenclatorial type. Karsten describes the genus as follows:

"Receptaculum pileatum, sessile, primitus subcarnoso-succosum dein induratum, crusta tenuiore tectum. Hymenium heterogeneum. Pileus azonus. Pori integri, demum subsecedentes."

Ischnoderma fuliginosum (Scop.)

Boletus fuliginosus Scop. Fl. Carn. ed. 2. **2**: 470. 1772.
Boletus rubiginosus Schrad. Spic. Fl. Ger. 168. 1794.

Boletus resinosus Schrad. Spic. Fl. Ger. 171. 1794.
Trametes benzoina Fr. Epicr. 489. 1838.—Icon. *pl. 483. f. 2.*

This large and striking species was originally described from Carniola by Scopoli. It is quite abundant in temperate regions of Europe and North America on fallen trunks of basswood, beech, maple, fir, spruce, etc. On account of its habit of growing beneath logs, the fruit-bodies often persist in a good state of preservation until the following spring. Logs are frequently found entirely covered on the under side with these extensive hymenophores. Whether the form found on coniferous wood is the same as that occurring on hard wood is an old question. There seems to be usually some difference in size and color, but after examining a large assortment of specimens, it seems impossible to distinguish the forms specifically either in this country or in Europe. More specimens from coniferous trees in this country would doubtless throw light on the question.

The following specimens have been examined in the Garden herbarium: Ell. N. A. Fung. *406;* Shear, N. Y. Fung. *112;* Kellerman, Ohio Fung. *105;* Canada, *Dearness, Macoun;* New York, *Earle, Atkinson, Miss Overacker, Murrill;* Delaware, *Commons;* Pennsylvania, *Sumstine;* West Virginia, *Nuttall;* Virginia, *Ricker;* Ohio, *James, Lloyd, Kelsey, Kellerman;* Michigan, *Merrow;* Wisconsin, *Baker;* Alabama, *Earle;* Florida, *Calkins;* Tyrol, *Bresadola & Murrill.*

Laetiporus gen. nov.

Hymenophore annual, epixylous, fleshy, anoderm, caespitose-multiplex; context cheesy to fragile, light-colored, tubes thin-walled, fragile, bright yellow, mouths irregularly polygonal; spores smooth, hyaline.

This genus is based on *Agaricus speciosus* Batarr. Fung. Hist. 68. *pl. 34. f. B.* 1755, commonly known as *Polyporus sulphureus* Fr. It may be at once distinguished from species of *Grifola* by its yellow color and arboreal habit. The generic name chosen refers to the brilliantly colored hymenium.

Laetiporus speciosus (Batarr.)

Agaricus speciosus Batarr. Fung. Hist. 68. *pl. 34. f. B.* 1755.
Boletus sulphureus Bull. Herb. France, *pl. 429.* 1788.
Boletus citrinus Planer, Ind. Plant. Erf. 26. 1788.

Polyporus sulphureus Fr. Syst. **1**: 357. 1821.
Polypilus sulphureus Karst. Rev. Myc. **3**: 17. 1881.
Polypilus speciosus Murrill, Jour. Myc. **9**: 93. 1903.

This species is widely and abundantly distributed both in Europe and America and is exceedingly well known on account of its size, conspicuous habitat, and bright attractive coloring. The mycelium spreads widely through the trunks of deciduous, and even evergreen, trees, causing serious damage, while the sporophores appear annually in caespitose-multiplex masses at knot-holes on the affected parts. The various names under which the plant has been known all refer to the bright color of these sporophores, which are usually reddish-yellow above and sulfur-yellow below, fading to almost white with age. A few of the numerous collections in which this plant figures are noted here: Sweden, *Murrill;* Maine, *Miss White;* Connecticut, *Miss White;* Delaware, *Commons;* New York, *Peck & Earle;* Pennsylvania, *Everhart & Haines;* New Jersey, *Ellis, Murrill;* Alabama, *Earle;* Louisiana, *Langlois;* Mexico, *Smith.*

Trichaptum gen. nov.

Hymenophore annual, epixylous, sessile, dimidiate; context brown, firm and leathery below, very loosely fibrous and darker above; tubes short, thin-walled, mouths polygonal, becoming labyrinthiform; spores smooth, hyaline.

The type of this genus is *Polyporus trichomallus* Berk. & Mont. (Ann. Sci. Nat. III. **11**: 238. 1849), described from Guiana. It resembles the old-world genus *Funalia* erected by Patouillard in 1900 with *P. mons-veneris* Jungh., *P. leoninus* Kl. and *P. funalis* Fr. as typical species and *P. trichomallus* Berk. & Mont. in a subsection; but it may be easily distinguished from *Funalia* by its darker context and daedaleoid hymenium. While splitting often occurs, rendering the hymenium irpiciform, the splitting is not so radical as in *Funalia.* The name chosen refers to the loosely woven context.

Trichaptum trichomallum (Berk. & Mont.)

Polyporus trichomallus Berk. & Mont. Ann. Sci. Nat. III. **11**: 238. 1849.
Funalia trichomalla Pat. Tax. Hymen. 95. 1900.

The type plants of this species were collected in the eastern part of Guiana by Poiteau and fully described by Montagne. It has since been frequently collected in many parts of South America and ranges northward to Central America and the West Indies. Plants seen in some herbaria labelled *P. heteromallus* are only large zonate forms of this species. A decidedly sinuous hymenium is present in specimens recently collected in Cuba and Jamaica. Collections are at hand from Bolivia, *Williams;* Colombia, *Baker;* Nicaragua, *Smith;* San Domingo, *Massee;* Jamaica, *Underwood 2833;* Cuba, *Underwood & Earle 1131.*

Pogonomyces gen. nov.

Hymenophore annual, epixylous, dimidiate-sessile to flabelliform, thickly covered with rigid hairs; context dark-brown, punky, tubes short, thick-walled, mouths small, circular; spores smooth, hyaline.

This genus is founded upon *Boletus hydnoides* Sw. (Prodr. 149. 1788), described from Jamaica. It may at once be distinguished from *Trichaptum* by its small, cylindrical, very thick-walled tubes. The name selected refers to its thick covering of bristly hairs.

Pogonomyces hydnoides (Sw.)

Boletus hydnoides Sw. Prodr. 149. 1788. — Fl. Ind. Occid. **3**: 1924. 1806.

Boletus hydnatinus Bosc, Gesell. Natur. Freunde Mag. **5**: 84. *pl. 4. f. 3.* 1811.

Polyporus pellitus Mey. Fl. Esseq. 304. 1818.

Boletus crinitus Spreng. Vet. Acad. Handl. 51. 1820.

Boletus fibrosus Hook. in Kunth, Syn. Pl. **1**: 10. 1822.

Polyporus Featherm anni Rav. Grevillea, **6**: 130. 1877.

This very abundant tropical species was first described in 1788 from Jamaica. In enlarging his original brief description for the Flora of the West Indies, Swartz also enlarged his description of the type locality to read: "On trees in the mountains of Jamaica." In 1811, Bosc describes and roughly figures the same plant, remarking that "one might use it as the type of a new genus." Meyer later described it from South America under the name of *Polyporus pellitus*, and Sprengel from Porto Rico, as *Boletus crinitus.* Its most recent name was assigned by Ravenel to specimens collected by Featherman at Gainesville, Florida.

The great abundance and striking appearance of this species account for the attention which it has received, but should tend rather to lessen than to increase the list of synonyms. Every expedition to the southern states or the West Indies discovers quantities of it. The following list of specimens will indicate its range: Florida, *Martin, Calkins, Small & Carter 1319, 1331, 1332, 1351; Britton 127, 128, 343, 366, 448, 477;* Louisiana, *Langlois 1280;* Cuba, *Underwood & Earle 374, 1524, 1532, 1538;* Porto Rico, *Earle 30, 52, Underwood, Wilson 114;* Haiti, *Nash 24;* Jamaica, *Earle 200, 425b, 189, 619;* Yucatan, *Millspaugh;* Colombia, *Baker;* Nicaragua, *Smith, Shimek;* Mexico, *Smith.*

SPECIES INQUIRENDAE

Trametes ocellata B. & C. Jour. Linn. Soc. Bot. **10**: 319. 1868. Investigation had indicated that this species also was synonymous with *P. hydnoides*, but the recent discovery of a large-pored specimen by Small and Nash on Totten's Key, Florida, reopens the question and further comparison and probably more material will be necessary in order to settle it satisfactorily. The evanescent membrane mentioned by the authors in connection with this species appears to be present also in *P. hydnoides* and cannot serve as a distinguishing character.

NEW YORK BOTANICAL GARDEN.

On Pisonia obtusata and its allies

N. L. Britton

Pisonia obtusata was described by Jacquin in Hort. Schoenbr. **3**: 36 (1798), and figured at *pl. 314* of that work; a detailed description is given of the plant which came from the island of New Providence, Bahamas, "in insula providentiae." Eight years later, in 1806, Swartz in Fl. Ind. Occ. **3**: 1960, described another *Pisonia obtusata*, which came from the island of Saint Bartholomew, one of the Windward Islands, south of St. Thomas. Grisebach in Fl. Br. W. I., 71, credits the species to Swartz and not to Jacquin, making no mention of the type locality in the Bahamas, and this blunder is continued by Heimerl in Engler's Bot. Jahrb. **21**: 625, in his monograph of West Indian *Nyctaginaceae*, although he cites Jacquin's original description and figure, placing it, however, after his citation of Swartz. This all goes to show that attention to type localities is desirable.

In looking over the collections of Bahamian plants made by Professor Coker, during the exploration conducted by the Geographical Society of Baltimore in the summer of 1903, and those made by me in the summer of 1904, I have had occasion to identify the *Pisonia obtusata* of Jacquin, which is well illustrated by several specimens.

Contingent upon his error in the proper identification of the species, Heimerl has described (*loc. cit.*) the Bahama plant as *Pisonia calophylla*, which thus becomes a synonym of *P. obtusata* Jacq.

A further part of the history of the misidentification of this species is to be found in the reference of the plant of southern Florida to *Pisonia obtusata* Sw., by Chapman, South. Fl. 374; by Sargent, Silva, **6**: 111. *pl. 297*, and by Small, Fl. SE. U. S. 411; this has nothing to do with either the *Pisonia obtusata* of Jacquin or with that of Swartz; Heimerl has included it in his *Pisonia discolor longifolia* (*loc. cit.* 627), making, I believe, a further error in supposing it to be only a form of *P. discolor* Spreng., the type locality of which is Jamaica.

The *Pisonia obtusata* of Swartz has been referred, together with *P. coccinea* Sw., which came from Haiti, to *P. inermis* Jacq., originally from Cartagena on the mainland of South America, but without the present opportunity to examine type-specimens I am unable to verify this reference; Heimerl places *P. coccinea* Sw., in the related genus *Neea*. *Pisonia Pacurero* H.B.K. is referred by Grisebach and by the Index Kewensis to *P. inermis*, and plants from the Windward Islands, Porto Rico and Jamaica, as well as numerous South American specimens, certainly appear to be conspecific with the one figured on *plate 24* of the Botany of the Herald; if Herr Heimerl had stopped to compare the plate of Jacquin illustrating *P. obtusata* with this illustration, I think he could not have failed to have noticed that they represent two entirely different species, although he cites them both under *P. obtusata* Sw.

I have a further criticism to make of current generic references of these trees to the genus *Pisonia* L., the type species of which is *P. aculeata* L., a woody vine with recurved prickles and clavate gland-bearing fruit; the trees under consideration being wholly unarmed and with red drupe-like fruits, the smooth fleshy or juicy exocarp completely enclosing the hard ribbed anthocarp; that they can be congeneric with *P. aculeata* it is quite impossible to believe after seeing them growing in proximity with it in the Bahamian coastal thickets, and from an examination of the literature bearing on *Pisonia* I conclude that the generic name *Torrubia* Vell. Fl. Flum. 139 (1825), is the first one available for them, having as its type *T. opposita* Vell. *loc. cit.*, from maritime woods at Santa Cruz, Brazil. The Floridian and West Indian species known to me are as follows:

1. **Torrubia obtusata** (Jacq.)

Pisonia obtusata Jacq. Hort. Schoenbr. **3**: 36. *pl. 314*. 1825.
Pisonia calophylla Heimerl, Bot. Jahrb. **21**: 625. 1896.

Leaves oval or elliptic, thick, rounded at the apex, 6–9 cm. long, about twice as long as wide, often revolute-margined, the upper ones subcordate, the lower sometimes rounded or a little narrowed at the base; petioles stout, 3–5 mm. long; fruit bright red, shining, juicy, the anthocarp 5–8 mm. long.

Low coppices and scrub lands, mostly near the sea, island of

New Providence, Bahamas, *Cooper 18* and *23*; *Curtiss 126*; *Coker 5* and *252*; *Brace 163*, *183* and *189*; *Britton & Brace 176* and *484*.

2. **Torrubia rufescens** (Griseb.).

Pisonia calophylla rufescens Heimerl, Bot. Jahrb. **21**: 626. 1896.

Pisonia rufescens Griseb.; Heimerl, *loc. cit.*, as synonym.

Leaves thick, flat, obovate, finely and densely tomentulose beneath, rounded or truncate at the apex, cuneately narrowed at the base, the stout petioles 1–1.5 cm. long.

Cuba, *Wright 464*.

3. **Torrubia Cokeri** Britton, sp. nov.

Glabrous, the twigs gray. Leaves firm, obovate, 8 cm. long or less, 3–4 cm. wide, rounded at the apex, narrowed or somewhat cuneate at the base; petioles stout, about 1 cm. long; flowers sessile, the perianth and corymb-branches minutely tomentulose; staminate perianth about 3 mm. long, bluntly 5-toothed, about one-half as long as the stamens.

Tarpum Bay, Eleuthera, Bahamas, *Coker 401* (type); Cuba, *Linden 1988*.

This is included by Heimerl in his *P. calophylla*, in so far as Linden's specimens are concerned, but it is certainly distinct; Wright's Cuban numbers *2041* and *2042*, cited by Heimerl under *P. calophylla*, I have not seen.

4. **Torrubia suborbiculata** (Hemsl.)

Pisonia suborbiculata Hemsl.; Duss, Ann. Inst. Colon. Marseilles, **3**: 62. 1897.

A low glabrous shrub, 2.5 m. high or less, with round or broadly obovate glaucous leaves less than 4 cm. long, their petioles extremely short; fruit pulpy, cylindric, red and glaucous when ripe.

Known only from Martinique; *Duss 1467* and *4391*.

5. **Torrubia discolor** (Spreng.)

Pisonia discolor Spreng. Syst. **2**: 168. 1825.

Leaves oblong-elliptic, thin, 8 cm. long or less, 2–4 cm. wide, obtuse at the apex, narrowed at the base, slender-petioled; anthocarp about 6 mm. long, about one-half as thick as long; fruit oblong, red, the pulp rather thin.

The type is from Jamaica; the species is also known from Haiti (according to Heimerl), and from Cuba, *Wright 2040*; *Combs 446*; *Britton & Wilson 72*.

6. **Torrubia longifolia** (Heimerl).

Pisonia discolor longifolia Heimerl., Bot. Jahrb. **21**: 627. 1896.

Pisonia obtusata Chapm. South. Fl. 374. 1860. Not Jacq.

Leaves thin, the blades obovate to spatulate, 5 cm. long or less, or on young shoots longer, 2 to 4 times as long as wide, rounded or often emarginate at the apex, the very slender petioles 8–13 mm. long; fruiting corymbs dense or loose; fruit very juicy, shining, bright red to magenta red, obovoid-cylindric to globose-obovoid, often depressed at the top, the anthocarp 5–6 mm. long.

Type from the Bahamas, where it is very abundant in coastal coppices.

BAHAMAS: New Providence, *Brace 129* and *387*; *Coker 15* and *41*; *Britton & Brace 164*, *166*, *178* and *292*; Andros, *Northrop 517*; St. George's Cay, *Coker 316*; Watling Island, *Coker 472*.

FLORIDA: Key West, *Blodgett*, "large tree flowering in the summer;" same island, *Blodgett*, "shrub 10–15 feet;" Indian River, *Curtiss 2338*; Palm Beach, *Curtiss 5379*; Miami, *Garber*, *Britton 404*; Annette Key, *Simpson 342*, shoots showing the obovate nearly veinless leaves; Bull Key, *Small & Carter 657* and *660*.

CUBA: seashore near Matanzas, *Rugel 411*.

7. **Torrubia Bracei** Britton, sp. nov.

A slender tree, 5 m. high or less, the bark gray. Leaves thin, green on both sides; petioles very slender, 6–8 mm. long; blades narrowly obovate, 5 cm. long or less, rounded at the apex, cuneate-narrowed at the base; fruiting pedicels about 0.5 mm. long; fruit very juicy, oblong-obovoid, twice as long as thick, claret-red, truncate at the top; anthocarp 7–8 mm. long, 2 mm. thick.

Coastal coppice, Ft. Montague, New Providence, Bahamas, *Britton & Brace 168*, August 23, 1904.

This grows in company with the next preceding species and with *P. obtusata*, and is certainly different from either of them.

8. **Torrubia inermis** (Jacq.).

Pisonia inermis Jacq. Select. Am. 275. 1763.

Pisonia obtusata Sw. Fl. Ind. Occ. **3**: 1960. 1806. Not Jacq.

This type is from Cartagena, South America. The species, as I understand it, is widely distributed in northern South America and in the West Indies south of the Bahamas. It is said by Heimerl to grow in Florida, but our collections from that State do not contain it.

9. **Torrubia floridana** (Britton).

Pisonia floridana Britton; Small, Fl. SE. U. S. 411. 1903.

Known only from Rock Key, Florida, and readily distinguished from the other species by its dense pubescence.

Key to the above-mentioned species

Petioles stout.
- Petioles 3–15 mm. long; blades 6–9 cm. long.
  - Petioles 3–5 mm. long; leaves subcordate. 1. *T. obtusata.*
  - Petioles 1–1.5 cm. long; leaves cuneate or narrowed at the base.
    - Leaves densely brown-tomentulose beneath. 2. *T. rufescens.*
    - Leaves glabrous on both sides. 3. *T. Cokeri.*
- Petioles only 1 or 2 mm. long; blades 4 cm. long or less. 4. *T. suborbiculata.*

Petioles slender.
- Leaves glabrous.
  - Leaves rounded at the apex or emarginate.
    - Leaves oval or oblong. 5. *T. discolor.*
    - Leaves obovate or oblanceolate.
      - Fruit globose-obovoid, little longer than thick; anthocarp 5–6 mm. long. 6. *T. longifolia.*
      - Fruit oblong-obovoid, twice as long as thick; anthocarp 7–8 mm. long. 7. *T. Bracei.*
  - Leaves pointed, sometimes only bluntly acute. 8. *T. inermis.*
- Leaves densely pubescent, small. 9. *T. floridana.*

INDEX TO AMERICAN BOTANICAL LITERATURE
(1904)

The aim of this Index is to include all current botanical literature written by Americans, published in America, or based upon American material; the word America being used in its broadest sense.

Reviews, and papers which relate exclusively to forestry, agriculture, horticulture, manufactured products of vegetable origin, or laboratory methods are not included, and no attempt is made to index the literature of bacteriology. An occasional exception is made in favor of some paper appearing in an American periodical which is devoted wholly to botany. Reprints are not mentioned unless they differ from the original in some important particular. If users of the Index will call the attention of the editor to errors or omission their kindness will be appreciated.

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